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EDITORIAL NOTES

IMMEDIATE PROBLEMS

FOR more than one reason we are glad to publish in our issue to-day an Address which Mr. A. E. Sylvester gave to the Fuel Luncheon Club in London last week. The Address was refreshingly short, but in it were compressed many thoughts and opinions, expressed unambiguously and with definition, on problems which confront our Industry—all those within it, and those who intend to enter it. Secondly, the Author, as Managing Director of the world's largest gas undertaking, speaks from experience covering a very wide horizon, and his views command respect. And thirdly—and this is surprising—it is, we think, the first time he has addressed an audience on the subject of the Gas Industry, all the more surprising in that his first platform was one not provided by the Industry itself.

Dictatorship versus freedom of choice in the use of fuel; personnel, their recruitment, and particularly their encouragement and advancement; regional grouping and the small undertaking *vis-à-vis* the large ; gas pricing in relation to peak loads and service; accounting methods and statistics—these were among the immediate problems touched upon briefly but incisively by Mr. Sylvester. They are problems which call for solution. Regarding the first, his attitude is clear—that it would be an almost impossible task to prescribe what fuel should be used in what circumstances, that competition must continue, but that this competition should be rid of its more objectionable features. Some form of regulation of competition is, in his opinion, desirable, and he suggested that this could best take the form of a control over price, and that an independent authority should be charged with the responsibility of seeing that prices are reasonably related to cost of supply, taking into account all the circumstances—which in effect brings us to the third point we have mentioned, that of pricing in relation to peak load.

"Economic" prices of fuel supply are presumably elastic, and consideration of them brings to mind at once the question of the economics of the supply of electricity for domestic heating purposes, including, of course, cooking. We take it that Mr. Sylvester strongly dislikes the idea of any one load subsidizing another; and we take it, too, that the base load on which an electric power station has hitherto been built has been the dual one of lighting and power—in other words, that plant capacity has been designed to cover the two loads superimposed at peak periods. Thus at times of off-peak load there is a certain amount of plant which could generate electricity for other purposes, such as domestic cooking, heating, and water heating. The lighting load, virtually a monopoly, can stand a relatively high price per unit generated and surplus current, at off-peak periods, can be supplied at a relatively low cost, bolstered-up as it were by the revenue from lighting. On the other hand, regarded by itself, the electric heating load would be wholly uneconomic. Granted this, we foresee at the end of the war a very large surplus generating plant capacity, able, with the lighting monopoly and the sound position of the power load, to offer at what the electricity industry will consider all-round economical rates electric current cheaply for domestic purposes within the limits imposed by the over-riding peak load consideration. We do not know how the Gas Industry assesses this capacity; that it is a factor of competition there seems little doubt.

Speaking of the question of arriving at the proper price to be charged for the supply of gas in different circumstances, Mr. Sylvester expressed the view that the principle of charging what the traffic will bear is a very unsound one (*cf.* electricity). Faced with competition the sound policy is to relate prices of supply for different loads to their cost; otherwise the practice of one load subsidizing another is inevitable. Price fixing, he argued, should be worked out on large categories of consumers arrived at by grouping like with like by reference to load factor or other characteristics. "Prices should be built upwards from actual costs, and not downwards by way of discounts from some nominal top price"; and the two most important items are load factor and the amount of service which the gas undertaking is prepared to give to each class of load.

Peak load is, of course, an all-important matter. For industrial purposes, progress in the use of gas, accelerated during the war, is likely to continue after the war is over. In the domestic sphere Mr. Sylvester believes that the provision of hot water by gas offers a big field, but that, while space heating must remain an important item, the heavy peak loads which this business entails cannot be obtained by either gas or electricity if this class of business is called upon to bear its proper share of costs. This, he added, by no means rules out the provision of space heating in circumstances which avoid heavy peaks, and which can justify its cost on the grounds of convenience. We ourselves feel that in the past insufficient has been made of the convenience factor of gas heating, and that, having experienced its advantages, a considerable section of the community would be prepared to pay for the service a price economical to the gas undertaking. We also visualize an extension of the gas space heating load as a result of the improved efficiency, and hence lower running costs, of appliances combining radiation and convection. We see very great possibilities in what has come to be known as background heating—and in these thoughts we are considering not only the new houses which will have to be built, but the millions of existing houses the occupiers of which will seek that higher standard of heat service which the Gas Industry has proved itself capable of offering.

But to contemplate an immediate and wholesale substitution by gas of solid fuel for domestic heating throughout the year is fantastic; still more fantastic is it to think of electricity's filling the role. The Gas Industry, however—and herein to our mind lies its future strength and present potentiality—is that hand-in-hand with the manufacture of gas goes the solid smokeless fuel to meet the winter peak heating loads. The combination of gas and coke is assuredly economic; their balanced use has everything in its favour, and it is encouraging to see so many demonstrations indicating that the Industry is not only thinking but working along these lines. It is a general plan more likely than any other to extend the all-gas idea in those circumstances and under those conditions for which it is fitted.

We have mentioned accounting methods and statistics, and we think there can be no valid argument against Mr. Sylvester's contention that the time is overdue for uniformity. Properly compiled and interpreted, accounts and statistics form not only a record but a reasonable foundation on which policy can in part be framed. We have not yet commented on Mr. Sylvester's very definite views on regional grouping and what, put quite clearly, is the elimination of the small undertaking—which, in the Author's opinion is not a question merely of efficiency or inefficiency, but a matter of size and situation. Co-ordinated manufacture and distribution—the manufacture and distribution of gas of uniformly high quality irrespective of district—constitute in his mind the Industry's major problem. Because of the large number of small units, he contended, the Industry fails to attract the quantity of personnel of the right quality; furthermore, the Industry is judged, not by the achievements of any particular concern, but by the service the public receives up and down the country from local undertakings. This is, of course, beyond dispute, though we suggest that the Industry is also judged according to the way individual undertakings cope with local requirements, *vis-à-vis* other services, such as electricity, water, and telephone, including sanitation. Centralized generation of electricity and the grid system of distribution make for uniformity of the "quality" of electric current, and when the

electric cables reach the rural areas—and they are stretching there more and more—the countryside gets the equivalent of an urban supply as regards quality; we are not considering price and demand, which presumably are inter-related. Electricity is covering areas hitherto either having no gas service at all or being served by gas from a small works having a correspondingly small staff. Comparison between electricity and gas is inevitable, and the outcome of that comparison depends on the service offered and the price factor. It is a fact that in certain rural areas, within close range of small rural gas-works, in which gas until a short time ago was unknown, gas of constant quality is being supplied through systems of co-ordinated manufacture and distribution at an economic price; and the demand is relatively large.

Such supplies are bound to develop; they will extend the scope of the Gas Industry; they will automatically create a demand for a higher paid and more expert personnel. We suppose that is an example of what Mr. Sylvester had in mind. But the conception is new and the achievement modern; and it cannot be said that the small undertakings, according to the requirements of their time, have not fulfilled a purpose usefully. Looking to future—even present—needs they may be incapable of meeting them satisfactorily, but we cannot regard Mr. Sylvester's contentions as being an indictment of the small undertaking or its management; and we certainly are not alone in believing that increase in size is not *per se* an index of increase in general overall efficiency. Many industrial undertakings—and the Gas Industry is not an exception—became so large, so unwieldy, so impersonal, and often so convinced of their omnipotency, that decentralization became not just desirable but necessary and, indeed, was to invigorating purpose put into effect. And before terminating this note we would query to what extent the small undertakings have in the past had a stultifying effect on the Industry's growth as a whole. For very many years they have *in toto* represented only a very small proportion of the sales of gas by the Gas Industry; they have satisfied the demands placed upon them, in many cases with conspicuous success; often they have in enthusiasm, initiative, and enterprise been in advance of some of the larger undertakings and have not made gas stink in the nostrils of the public. *Autres temps, autres mœurs* we willingly accept; but how many of those who have occupied or occupy leading positions at any rate on the gas engineering side of the Industry received their early experience with smaller undertakings, finding such experience of untold value in coping with the larger responsibilities they have shouldered or continue to carry out in the larger undertakings? If the small undertaking has through *force majeure*, in this case limited financial resources, failed to retain the services of the more ambitious, it has none the less played a useful part and has not, we think, acted in any general sense as a barrier to the recruitment of efficient personnel.

We have written at some length on Mr. Sylvester's Address. We found it stimulating, and we think that with this description those who read it on later pages will agree. It was an Address characterized by thought penetrating below the surface and expressed with admirable conciseness. We hope that, after this breaking of the ice, it will not be long before we hear Mr. Sylvester speaking again—on a Gas Industry platform. Cannot the Industry, with such a variety of platforms at its disposal, be a little more persuasive in this regard?

OUT OF THE PICTURE

ON Thursday last, through the courtesy of the British Council we were able to meet, at a reception at the Dorchester Hotel, London, the eminent Indian scientists who are visiting this country to see at first hand how we are coping with the problems of scientific education and scientific research, pure and applied, over a very wide field. A full programme has been planned for our visitors from India; they are destined to have a very busy time, and, it is to be hoped, a profitable one. Government laboratories—the National Physical Laboratory and the Fuel Research Station of the D.S.I.R. at East Greenwich—the headquarters of industrial research associations, among them the British Coal Utilization Research Association and the British Refractories Research Association at Stoke-on-Trent, and private industrial laboratories such as those of the General Electric Company, are being thrown open to them for inspection. But amid all the many items in this ample programme, we think we are right in saying that the Gas Industry does not figure at all. It is unfortunate that our Industry has no central research headquarters when it is, in fact, sponsoring a considerable volume of valuable and constructive research, and has for so many years now carried out research in the pioneering manner. For we were assured last Thursday by the Director of Scientific and Industrial Research of India, Sir Shanti S. Bhatnagar, that the interest in and work on fuel there intends to be all-embracing, covering gas as being not the least important aspect of the composite problem. We hope that our Indian visitors will not return to their country with the impression that for some obscure reason the Gas Industry here desires research obscurity. We in the Industry know what is being done; surely it is in the national interest to make this knowledge more widespread and more easily obtainable.

Personal

Presentations were made on Oct. 28 to Mr. A. H. CRANMER, Chief Engineer to the Wolverhampton Gas Company, who celebrated his 70th birthday on that day. He has been with the Company since 1902 and was appointed Chief Engineer in 1929.

* * *

Mr. S. A. J. HORROD, formerly Chief Chemist and Assistant Works Superintendent to the Swindon United Gas Company, has been appointed Assistant Works Engineer, Watford Works of the Watford and St. Albans Gas Company.

Obituary

The death has occurred of Mr. E. H. DART, F.C.I.S., Secretary of the Exeter Gaslight and Coke Company. Mr. Dart joined the staff of the Exeter Company in 1901, and was appointed Secretary in 1924.

* * *

The death has taken place of Mr. ANDREW BIRREL DUNN at the age of 83. He was for about 20 years Manager of the Pittenweem Gas Company, retiring 10 years ago.

An Unusual Demonstration

An unusual demonstration was given on Oct. 17 at the Cowley Works of Morris Motors, Ltd. This was held during the lunch-hour break, and was given in the Works Canteen to a mixed audience of over 1,200 persons.

The demonstration, which occupied approximately 20 to 30 minutes, was given by Miss M. Narracott, Home Service Adviser to the Oxford and District Gas Company, who prepared and cooked three dishes in this time. These were carefully planned to attract factory workers—one of the principal points being the fact that they could be prepared quickly at the end of a tiring day, while giving full nutritional value.

The result of the demonstration was considered by the Publicity Officer of Morris Motors and the Canteen Catering Staff to be most satisfactory. Some 500 Ministry of Food leaflets and pamphlets giving various recipes were eagerly taken, together with typewritten copies of the dishes which were actually demonstrated.

A "New World" Cooker loaned and fitted by the Oxford and District Gas Company was used on the stage of the Canteen.

The Factory Management have already enquired about the possibility of further demonstrations for both employees and staff during the lunch-hour break; and they have also asked Miss Narracott to undertake further demonstrations at the conclusion of the day's work.

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Dividend

The Plymouth and Stonehouse Gas Light and Coke Company has declared a dividend (payable Jan. 1) for the half-year ended Sept. 30, at the rate of £5% per annum on the Ordinary Stock, 7s. 6d.% on the "Additional" Shares, and 7s.% on the New Shares, Act 1879, less income tax. For transferees to receive this dividend, transfers must be lodged at the Company's Offices not later than Dec. 11 next.

Manchester District Association

An Ordinary General Meeting of the Manchester District Association of Gas Engineers was held at the Midland Hotel, Manchester, on Oct. 27, Mr. Norman Hudson (Mirfield) presiding over a very large attendance of members.

The members rose in tribute to the memory of the late Mr. Alexander Mackay, formerly Chief Engineer and General Manager of the City of Stoke-on-Trent Gas Department, who died on Aug. 15. Mr. Mackay had been both Junior and Senior Vice-President of the Association, and only had to give up the possibility of occupying the Presidential Chair owing to ill health.

The President extended a greeting to the following-mentioned, who were formally inducted as new members of the Association: F. Brian Holmes (W. C. Holmes & Co., Ltd.), G. E. H. Keillor (Engineer and Manager, Gas Department, Marple), H. H. Knowles (Engineer and Manager, Gas Department, Buxton), and J. G. Tilley (Engineer and Manager, Gas Department, Brighouse).

The President announced that it had been decided by the Council to offer Honorary Membership of the Association to one of their members in recognition of his having been a member of the Association for 50 years. In asking Mr. John Wilkinson, O.B.E., F.C.S. (Nottingham), to accept Honorary Membership of the Association, he felt that in conferring upon that gentleman the highest honour which it was within the province of the Association to offer, they were really only making a token of their appreciation of the part he had played as one of the members. Mr. Wilkinson joined the Association in November, 1894, and during his continuous membership since that date he had acted as Hon. Secretary of the Association, been a very active member, and had brought, in addition, reflected glory to the Association through occupying the Presidential Chair of The Institution of Gas Engineers.

Mr. George Dixon (Nottingham) asked that he might be allowed to support the Council's recommendation in inviting Mr. John Wilkinson to accept Honorary Membership of the Association. It was the highest honour the Association could confer. When the Nottingham Gas Committee learned that Mr. John Wilkinson was coming to Manchester to be made an Honorary Member of the Association, they unanimously passed the following resolution and asked him, the speaker, to read it at the meeting:

> "Sir Albert Ball and members of the Gas Committee, Nottingham, desire to be associated with the congratulations and good wishes to Mr. John Wilkinson, O.B.E., upon the richly-deserved honour conferred upon him by his colleagues in recognition of his 50 years' membership and good service."

Mr. T. Reynolds (Stockport), speaking as a native of Nottingham, paid tribute to Mr. Wilkinson. Personally, he had much to thank him for, as had also some of his colleagues.

Mr. C. Wood, O.B.E., F.C.S. (Bradford), speaking as the oldest member of the Institution, having been a member of it for 58 years, said he had known Mr. Wilkinson since he was a small boy in knickerbockers. They had been very great friends all that time.

Mr. Wilkinson, speaking in appreciation of the conferment of Honorary Membership upon him, said it was obvious that when a man had completed 50 years' membership of an Association and had ended his active career, he had left the best things of business life behind him. Therefore it came as a very pleasant surprise to find he had not been entirely forgotten, and that his fellow members had devised ways and means of giving him some little promotion even at so late a stage in life. He asked them most sincerely to accept his grateful thanks for their kindness in electing him an Honorary Member of the Association. He concluded his expression of appreciation of the honour which had been conferred upon him by wishing the Association an extended sphere of usefulness, and for its members individually good health, prosperity, and a long life to enjoy them.

Following presentation of I.G.E. Certificates by the President, the following were elected Officers of the Association for 1945:

President-Elect: C. H. Bamber (Rochdale).
Senior Vice-President: G. E. Currier (Bradford).
Junior Vice-President: T. R. Cook (Blackpool).
Hon. Secretary and Treasurer: T. Haworth (Wigan).
Committee: T. W. Barrett (Morecambe); F. Greenhalgh (Oldham); J. E. Wakeford (Warrington).
Auditors: A. F. Yates (Goole); J. H. Richmond (Runcorn).

A Paper on "The Gas Industry—Four Major Problems" was then read by Mr. G. E. Currier, M.I.Mech.E. (Bradford), and was followed by a long discussion. The Paper is published in to-day's "JOURNAL," and a report of the discussion will appear subsequently.

The Nottingham Gas Department are erecting a ground floor model of a post-war house to their own design, fitted with the latest labour-saving appliances, in Glasshouse Street, near the gas showrooms and theatre. The home, designed with council house occupants in mind, will be centrally heated on a modified scale by a special type of slow combustion coke stove. This will provide warmth for the living room and hot water for the whole house, with sufficient reserve to cater for hot water radiators. There will be a gas washing machine, gas clothing drier and airer, gas cooker, and gas refrigerator.

Institution of Gas Engineers

The Council of The Institution of Gas Engineers met in London on Oct. 10, and the following were some of the matters dealt with:

It was decided not to hold an Autumn Research Meeting this year. Reports of the Work of the Technical Committees of the Institution, incorporated in the 5th Report of the Chairman's Technical Committee, and a Report of the work of the Gas Education Committee, will be published in due course.

It was agreed that, circumstances permitting, an Annual General Meeting should be held in June, 1945.

A report was made of the work of the following Technical Committees of the Institution:

(*a*) Joint Lighting Committee: The resignation of Mr. George Dixon from the Chairmanship and from membership of the Joint Lighting Committee was received with much regret. The despatch to all gas undertakings was reported of letters regarding the relaxation of the lighting restrictions. (*b*) Liquor Effluents and Ammonia Committee. (*c*) Meters Committee: It was resolved to refer to the Gas Research Board certain recommendations by the Meters Committee for research. (*d*) Codes of Practice Sub-Committee: It was reported that five Codes of Practice, dealing with Gas Service Pipes, Gas Installation Pipes, Metering and Consumers' Control, Gas Lighting (Single Family Dwellings), and Space Heating by Independent Gas Appliances (Single Family Dwellings) respectively, had been submitted to the Codes of Practice Engineering Services Sectional Committee of the Ministry of Works, and would be circulated to the Gas Industry by the British Standards Institution for comment in the near future.

It was reported that a donation of 100 guineas had been received from the Directors of the Tottenham and District Gas Company in memory of the late Mr. A. E. Broadberry (Past-President of the Institution).

It was reported that the Evidence of the Institution was completed, and would be handed to the Ministry of Fuel and Power Committee of Enquiry within a few days.

It was reported that the William Cartwright Holmes Scholarship in Gas Engineering for 1944 had been awarded to Mr. G. F. I. Roberts (Hereford).

A report was made by the Chairman of the Council of the Gas Research Board of the current activities of the Board.

Matters raised by the District Members of Council were considered.

Consideration was given to the representation of the Institution on certain technical committees of the British Standards Institution.

British Standards Institution

The Annual General Meeting of the British Standards Institution was held on Oct. 17. The Right Hon. Lord Woolton, C.H., P.C., was elected President of the Institution, and Sir Percy Ashley, K.B.E., C.B., was elected Vice-President. Sir William Larke, K.B.E., succeeded Sir Percy Ashley as Chairman of the General Council.

Dr. E. F. Armstrong, F.R.S., Chairman of the Finance Committee, explained that the income and expenditure for the year had increased by 28% and was now about £69,000. The sales of copies of British Standards had gone up 39%. The Government grant-in-aid was nearly double and was now £12,900. While there was an increase of some 15% in the number of subscribing members, he pointed out the need for greater support from local authorities and industry.

Sir Percy Ashley concluded his term of office as Chairman of the General Council with a brief review of the work done as a direct aid to the war effort by the British Standards Institution, and the progress made during the same period in the preparation of British Standards for industrial and commercial materials and appliances.

Sir Percy pointed out that the post-war reconstruction work was now beginning and would increase. The preparation of standards for building materials and appliances now being carried out in support of the programme of house building of the Ministries of Works and Health had already reached substantial proportions. Many other standards were in course of preparation.

Sir Percy concluded by saying: Industrial standards—providing for accurate and precise trade descriptions, methods of sampling and testing, and standards of performance—are likely to be increasingly desirable. If they are to meet the general acceptance they must be prepared and promulgated by either a Government Department or an independent body, set up and maintained by the national industry as a whole, with Government support but not under Government control. Such an organization has been built up during 40 years in the British Standards Institution. That British industry would prefer it to any form of Government Standards bureau I have no doubt, just as I have no doubt that though it may be necessary in some cases for Government to enforce the observance of standards, yet broadly progress will be most widespread and continuous if the policy of "standardization by consent" is consistently pursued, and if whatever changes in organization and methods may be made from time to time the principles on which this Institution has been so successfully built up and developed are steadily maintained.

Yorkshire Juniors

The 39th Annual General Meeting of the Yorkshire Junior Gas Association was held on Oct. 7, at the Great Northern Hotel, Leeds, under the retiring Presidency of Mr. V. J. J. Siddons, of Rawmarsh.

In a brief annual report the Hon. Secretary (Mr. G. E. Banks, of Sheffield) recorded that membership showed a slight increase in spite of several resignations on retirement from active service in the Industry or leaving the Association's area to take up new appointments. Thirteen new members had been enrolled.

Supplementing the report the retiring President said the Association greatly valued its being able to have two representatives (Mr. Siddons and Mr. J. R. Firth, President and Senior Vice-President) to the Manchester District Association of Gas Engineers instead of one, as previously; also two representatives (Messrs. Firth and F. Beaumont) on the Yorkshire Gas Coke Association; and Mr. Siddons as representing the Association on the Post-War Planning Committee of the Yorkshire Section of the Manchester Senior Association.

Officers elected for the ensuing year were:

President: J. R. Firth (Bradford).

Vice-Presidents: C. A. Newham (Leeds), and F. H. Nichols (York).

Hon. Treasurer: J. Hargreaves, (Bradford).

Hon. Secretary: G. E. Banks (Sheffield).

Additions to Council: R. Anderson (Bradford), Dr. H. A. Fells (Sheffield), W. T. Hird (Sheffield), D. C. Gunn (Leeds), and G. J. Dougherty (Harrogate), with V. J. J. Siddons and F. Beaumont as the two most recent past-Presidents *ex-officio*.

Messrs. A. H. Clucas (Leeds), G. Griffiths (Bradford), D. C. Gunn (Leeds) and Dr. H. A. Fells (Sheffield) were reappointed to the District Education Committee, and Mr. Norman Hudson, of Mirfield, was confirmed as representing the Yorkshire Junior Association on the Manchester District Association of Gas Engineers, of which he himself was the President.

Considerable discussion ensued on a motion by Mr. Gunn for alteration of rule proposing to widen the Association's membership by admission of approved persons on the appliance supply side of the Gas Industry or other people, provided they held recognized gas qualifications and were corporate members of the Institution; also students employed in Yorkshire gas undertakings.

The discussion centred entirely around the point as to admission of trade representatives. The President said the Council had considered the proposal from every angle and with sympathy, but came to the conclusion that the admission of such "external" members would be a retrograde step. It had been recalled that the membership position from this aspect was reviewed some few years ago. The Council thought the subject might be tabled for consideration on a future occasion, but could not recommend its acceptance as a change of rule at present.

In the course of discussion Mr. Gunn and Mr. Dougherty, his seconder, urged that there were persons—some of whom were present that day as interested visitors—whom they felt many members would like to have in membership because of their goodwill towards the Association and its work. While such persons in the supply industry might be admitted, the Association would still be able to decline membership from any others who were not considered so acceptable.

The President said the Council were fully in agreement that they would like the membership of such individuals as the movers had in mind, but did not consider it advisable to open the way to some by a change of rule which would equally open it to all.

The meeting eventually carried an amendment by Mr. A. Wylie (Sheffield), seconded by Mr. J. Carleton (Shipley), referring the matter back to the Council for further consideration, but that no alteration of rule be made in the meantime.

Mr. Siddons, inducting the new President, said while he had himself a fairly long connexion with the Yorkshire Junior Association, Mr. Firth had had a much longer one, and they all recalled his good work as a former Hon. Secretary and many years on the Council.

Mr. Firth, responding, said he realized that members of the Junior Associations would have no small part in assisting to clear up the many problems that had arisen in the Gas Industry, and with this in mind the programme for the session has been arranged to cover as many aspects as possible.

Mr. Thompson, on behalf of Mr. Hartley, of Clayton & Sons, Ltd., made the annual Clayton Award to the member contributing what had been judged by the Council as the best Paper of the session. The award went to Mr. F. H. Nichols, of York, whose Paper had also been awarded the Silver Medal of the Society of British Gas Industries. Congratulating Mr. Nichols, Mr. Thompson regretted that war conditions again, as last year, made it impracticable to hand over an actual medallion as in normal times, but it was hoped the time when these medallions could be made and presented was now not so far distant. The subject of Mr. Nichols' Paper, "The Future of the Industry," was, of course, a vital one.

Mr. R. N. Webb presented his Annual Prize to Mr. A. Higgs (Leeds), contributor of the best of the "short Papers."

On the motion of Mr. S. Davies (Sheffield) the meeting placed on record on the minutes an appreciation of the services of Mr. A. Wylie, of Sheffield, past-President, and for 19 years a member of Council, who at that meeting had to come off the Council under rule.

Mr. G. E. Currier, Engineer and General Manager to the Bradford Corporation Gas Undertaking, gave an Address under the title "The Young Man's Outlook." We shall publish the Address in a subsequent issue of the "JOURNAL."

Manchester Juniors

There was a large attendance of members at the 46th Annual General Meeting of the Manchester and District Junior Gas Association which was held in Bolton on Oct. 14.

After inspecting the Gas-Street Works, the members assembled in the Reception Room, Town Hall, Councillor Knowles Edge, the Vice-Chairman of the Gas Committee, welcoming them to Bolton and apologizing for the absence of the Chairman, Alderman T. Glaister, owing to illness. He said that Alderman Glaister had been the Chairman of the Gas Committee for nearly 22 years. The Bolton Undertaking was prosperous and continued to expand under the capable guidance of Mr. Platt.

Mr. H. H. Thomas acknowledged the welcome and called attention to the main business of the meeting, which was to install Mr. Donald Benson as President for the ensuing session. He invested Mr. Benson with the Presidential chain of office, remarking that Mr. Benson had been a member of the Council for 10 years.

Mr. Benson expressed appreciation of the honour, and referred to the work that had been done by Mr. Thomas during his year of office.

Mr. Benson then gave his Presidential Address.

Mr. J. A. Speers (Preston), in proposing a vote of thanks to Mr. Benson, said that the immediate future would be a responsible time for the Junior Associations. It was essential that the members should be ready to take their place in the post-war planning and development of the Gas Industry, and it was particularly important that the right type of entrant should be attracted into the Gas Industry.

Seconding the vote of thanks, Mr. E. B. Fields referred to the support which has always been extended to the Manchester Junior Gas Association by the Bolton Corporation, and he mentioned that by reason of the services rendered to the Junior Associations, Mr. Platt had been elected Chairman of the British Junior Gas Associations' Joint Council.

Mr. H. N. Dann (Blackburn) was appointed to the Council.

After tea in the Town Hall, Mr. Bamber (Rochdale) proposed a vote of thanks to the Chairman and members of the Gas Committee. He referred to the close liaison that had always existed between Bolton and the Manchester Junior Gas Association. Mr. Benson was the fifth President to be chosen from Bolton, from which town two Secretaries had also been obtained. This distinction was due to the support that had always been given to the Junior Association movement by the Bolton Gas Committee and by the senior executive officers.

Mr. Thomas seconded the vote of thanks.

Alderman Beswick replied, and Mr. Platt briefly outlined the activities of the British Junior Gas Associations' Joint Council.

Diary

Nov. 4.—Scottish Junior Gas Association (Eastern District): Visit to Galashiels Gas-Works.

Nov. 4.—Yorkshire Junior Gas Association: Meeting in Leeds. Paper by V. J. J. Siddons.

Nov. 7.—Southern Association of Gas Engineers and Managers (Eastern District): Films, "Boiler House Practice" and "Steam Utilization"; discussion opened by Mr. W. H. Gamble; Gas Industry House, 2.30 p.m.

Nov. 14.—N.G.C. Central Executive Board: Gas Industry House, 1.30 p.m.

Nov. 14.—Council of the British Gas Federation: Gas Industry House, 3.30 p.m.

That the Co-operation and assistance of the Gas Industry can always be relied upon was shown at Cambridge recently, when the Cambridgeshire Education Committee applied for the use of the University and Town Gas Light Company's Demonstration Theatre for a course of 10 cookery lectures. These started on Oct. 10, and were attended by the managers and senior cooks in school canteens and British Restaurants of the County and Borough. Permission was readily granted and all facilities were offered to ensure that the demonstrations were successful. The room is equipped for the projection of sound films, and during the series suitable Gas Industry films were exhibited.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.

Some Immediate Problems of the Gas Industry*

By A. E. SYLVESTER,

Managing Director, Gas Light and Coke Company

FOR the past two or three years it has been convenient to have at hand a large file, labelled rather grandly Post-War Planning, into which many of the more thorny of the problems that confronted us could happily be put away for future attention. The time has come, however, when the contents of this file must be brought into the light of day.

The problems must now be faced, and there are indeed so many that I could not in the time at my disposal attempt to deal with all of them, even if I were competent to do so. I propose, therefore, to limit myself to those which, from a managerial point of view, seem to me most urgently to need consideration. You will, I know, understand that the opinions I express are personal ones.

I am glad that I have to address the Fuel Luncheon Club and not a "Gas Luncheon Club," or even, if you will forgive such a wild flight of fancy, an "Electricity Luncheon Club." I say this because, when considering the particular problems of the Gas Industry, we must never forget that the point of view of the other branches of the fuel industry has a very important bearing upon them. In these times there is no room for isolationists, and no branch of any Industry can disregard the broader issues of its own Industry, or indeed of national policy.

I do not, however, propose to offer any observations on national affairs in general, but I cannot deal with the problems confronting gas without a passing reference to the position of the fuel industry as a whole.

The Government, appreciating the vital importance of fuel in the life of the country, has given us the Ministry of Fuel and Power to preside over our destinies, very properly emphasizing the unified conception of the fuel problem. The task put before the new Ministry has been a major one, and would have been difficult enough in peacetime. But it was not in peacetime that the Ministry was formed; it was formed in the middle of this tremendous war. I read in the Press a little while ago that a spokesman for one branch of the fuel industry complained of a nasty smell of gas in the Ministerial corridors. It may be that my sense of smell is less highly developed (I have no ambition to be a bloodhound anyway), for I have not noticed it. But I have noticed something quite different at the Ministry. I have noticed that in all my dealings there I have invariably received the greatest courtesy and helpfulness, and I am glad to have this opportunity of expressing appreciation. Provided of course that I am not assumed to be voicing any sense of satisfaction whatsoever with the coal situation.

There are signs that the Government feel it necessary to take greater interest or responsibility for public utilities, and fuel is apparently at or near the top of their list. In various ways information is being obtained and advice sought with regard to the several branches of the fuel industry. In the case of gas a Committee of Enquiry was set up in July under the Chairmanship of Mr. Geoffrey Heyworth, and I think most people will agree that this Committee is an able and well-balanced one. I do not propose to make any guess as to the policy the Government will ultimately adopt, but I find it difficult to imagine that any kind of dictatorship in fuel will be attempted. It would be an almost impossible task to prescribe what fuel should be used in what circumstances, and while it is obviously in the national interest that each form of fuel should be used in the way for which it is best suited, surely the most satisfactory means of arriving at this result is to allow the public to choose freely. This means that competition must continue, and I personally regard this as a good thing, for without competition the development of methods of using fuel would undoubtedly lose its impetus. There can be no doubt that progress in this respect up to the present time has been largely the result of competition, and there is still a great deal to be done. I should consider it as against the national interest for this spur to be removed.

At the same time it should be possible to rid competition of its more objectionable features. Some form of regulation of competition is desirable and this, in my opinion, could best take the form of a control over price; an independent authority should be charged with the responsibility of seeing that prices are reasonably related to cost of supply, taking into account all the circumstances. If this could be done it would ensure that the public's judgment in its choice of fuel would not be affected by unfair or uneconomic prices.

So much then for the general background. I must now proceed to deal with the immediate problems of the Gas Industry itself. The overriding and general problem is easily stated—how to give the best possible service to the public—and every decision on the detail of the organization must be with that end only in view. It is important to realize that however good may be the plans we make, their successful execution depends entirely upon the human element. General Eisenhower said recently, you will remember, that no defence line can be stronger than the men who are in it, and I think that this must be a general truth. The Gas Industry of the future will be no stronger than its personnel.

The Industry includes far too many small units, and these by reason of their size cannot possibly afford to offer first-rate men the prospects which their ability and energy deserve. It is of fundamental importance to remember this, for the public as a whole judges the Gas Industry not by the achievements of any particular concern, but by the service which it receives up and down the country from its local gas undertaking.

It is for this reason that I believe the personnel side of the Industry could and should be strengthened by the elimination of many of the small independent units—for only careful and considered grouping of undertakings into properly organized concerns of sufficient magnitude and importance will create openings attractive to ambitious young men qualified to become managers and technicians. At present the big jobs in the Industry are too few.

I do not myself consider that sufficient importance is attached to those personal qualities which are essential to able management as distinct from ability in engineering and other technical subjects. Such matters as finance and commercial policy, which are vital to the success of an undertaking, require experienced handling, and the most able engineer is not necessarily a good commercial man.

Here I should like to amplify these remarks by adding something on the subject of the whole body of employees in the Industry. From the management down to the latest recruit we are collectively engaged in a single venture—the supply of gas. There is no room for any rigid classification of personnel into watertight groups. Each newcomer to the Industry should be given full opportunity to find his own level in the scheme of things, whether he enters as a qualified technician or by one of the many other doors which are open for recruits. Educational advantages, possibly denied to a recruit by economic circumstances before he joins the Industry, should in as large a measure as possible be made up by educational opportunities available for junior employees of all grades who really show ambition and capacity to learn. It is not technical training alone that is required; there is also a wealth of valuable knowledge to be gained by meeting one's fellow men as we would say "on the district." When the time comes, then, for rebuilding the structure of our Industry, our first duty is to our existing staffs, both those who are now with us, and no less those who are on war service and have temporarily sacrificed their chances of promotion; they must be given the first chance.

There are undoubtedly a number of able men in the Industry who are deprived of the opportunity of advancement not only because of the reason already given, but also because of the difficulties which stand in the way of movement from one undertaking to another in regard to pension rights. Free movement is essential to a healthy industry, and there is, I feel, a strong case for immediate consideration of a new form of pension scheme which should cover the Industry as a whole. It seems an odd thing that an Industry which has shown itself so enlightened in regard to the subject of pensions should because of that find that it has created a barrier of this sort; but this is a problem which I have no doubt is capable of solution on a national basis.

I will now pass from personnel considerations to the problem of gas manufacture and distribution. There seems to be no shadow of doubt that from the point of view of cost and of quality of gas and by-products, gas-making should take place in large units. If any proof be wanted we need do no more than look at the cases where, by the chance of amalgamation, a big undertaking has taken over a small neighbour. Almost invariably, as soon as arrangements can be made, the small works is closed. That is so the length and breadth of the country. It is the policy adopted by all responsible engineers, and there are many figures to bear out the wisdom of such a policy. It is not, as is too often assumed, a question of efficiency or inefficiency; it is a question of size and situation—particularly situation.

Distribution technique has now reached a point where it allows of an extension of such a policy on a large scale. I see great benefits to be derived from a series of regional grids carefully planned to take advantage of the geographical situation and of commercial possibilities. These would make gas of a uniformly high quality available in town and country at prices perhaps varying according to the nature of the district, but on a low level throughout. And while the vexed political question of private and municipal ownership remains unsettled, I see no reason for withholding from the public the benefits of co-ordinated manufacture and distribution. The existing suppliers could be left to carry on as they are at any rate as a first step, as was done in the case of electricity, but the second step should not be long delayed, although the geographical grouping might not be the same.

What I have said is, in my opinion, the major problem of the Gas Industry, and I have deliberately introduced it by way of personnel because I believe that to be the crux of the matter. There are, of course, plenty of engineering and technical problems in the Industry, but I feel it is not for me to touch upon these as I cannot speak with knowledge and authority. As an administrator, however, there is one subject on which I would like to speak, and that is the necessity, long overdue in my opinion, for uniformity in accounting methods and statistics, and I seriously put this forward as one of the most

* Address to the Fuel Luncheon Club, Oct. 24.

immediate problems. Accounts and statistics properly compiled and interpreted are not merely the record of what has happened, they are the foundation upon which policy is framed. So long as this lack of uniformity remains, a commercial policy for the Industry as a whole presents overwhelming difficulties.

I would like to say a few words about commercial possibilities, for these necessarily bring many problems in their train. In recent years, and particularly during the war, the use of gas in industry has been greatly developed, and I have every reason to think that this process will continue. At the same time the provision of hot water for domestic use offers a big field. While space heating must remain an important item, I do not believe that the heavy peak loads which this business entails can be obtained by either gas or electricity if this class of business is called upon to bear its proper share of costs, but this by no means rules out the provision of space heating in circumstances which avoid heavy peaks, and which can justify its cost on the grounds of convenience. I do not need to remind you that the Gas Industry also provides coke.

The Gas Industry is faced with difficult problems in arriving at the proper price to be charged for the supply of gas in different circumstances, and I find a good deal of confusion of thought in this matter. To my mind the principle of charging what the traffic will bear is a very unsound one, and can only be applied successfully in the case of a complete monopoly, but even in such a case it is doubtful whether justice is done to the consumer. When you are faced with competition in every branch of business, the soundest thing is to relate the price of different articles to their cost as closely as circumstances permit. If this is not done it must follow that one article is subsidizing another, and unless the former is in a specially favourable position in respect of its market price it will be vulnerable to competition. It is wrong to speak of price concessions, for each class of business should pay what it ought to pay, and when a particular class of business involves an undertaking in low costs, it is not a concession but an act of ordinary justice to give effect to that in the price. To give an example, the price of gas supplied to a factory should include all the elements of cost, including interest on capital invested in plant, to the point at which the gas is delivered; there is very little to add to this. But the supply of gas for domestic purposes does not stop at that point; it must include the heavy cost of providing service to the consumer. If these two prices are correctly worked out they will be widely different, but there is no question of a concession; each should pay the costs incurred by the undertaking. It will not be imagined that a policy of price fixing would in fact be worked out on individual cases, but on large categories of consumers arrived at by grouping like with like by reference to load factor or other characteristics. It will be gathered from what I have said that I hold strongly to the view that prices should be built upwards from actual costs, and not downwards by way of discounts from some nominal top price. The two most important items to bear in mind in fixing prices are first the load factor, which affects the cost of manufacture, and the amount and cost of the service which the undertaking is prepared to give to each class.

It will, I think, be necessary for the Industry to make even clearer to the public at large that gas is a refined fuel, and is not used merely because it is cheap, but because of the service it gives. It is for this reason that the adoption all over the country of a high standard of consumer service becomes essential.

I referred earlier to the vexed question of company and municipal ownership. Naturally, as one whose entire business life has been spent in an atmosphere of private enterprise, I see clearly the benefits of that system, but it is evident that some measure of state supervision or guidance may be necessary in the public interest. It would be a great pity and to the public loss, however, if the question of ownership was not approached with a realistic intent to do what is right. The available evidence needs careful sifting, for it is clear that there are many cases of well-run concerns, and of the reverse, in both camps.

When I set out to prepare this short Address I meant it to be selective, but I am afraid it has become rather more discursive than I intended. And yet I have done no more than touch the fringe of a few selected problems. As time goes on the public will rightly demand a higher standard of comfort in their homes, and this means that the fuel industry as a whole will be called upon to do its share in providing that higher standard. Imagination and vision will be called for; there is always a place for the dreamer, although I confess I like the dreamer to have a good working knowledge of double entry book-keeping. There is work for us all to do, and it can be done in fair and friendly rivalry—not by any means ruling out the possibility even of co-operation in some circumstances. The public will be best served if we all concentrate in this spirit on giving the best of which we are capable.

The Gas Industry—Four Major Problems*

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Introduction

MOST people in the Gas Industry, and many without, will await with considerable interest the findings of the Committee appointed by the Ministry of Fuel and Power to enquire into the Gas Industry. Meanwhile, there is no reason why the Industry should not consider urgent problems requiring attention while awaiting the Committee's findings. Many are agreed that there should be reconstruction and reorganization of the Industry, but there is considerable divergence of opinion as to the extent and the manner in which this should be carried out.

I propose to outline some of the problems in the following order:

1. Coal supplies.
2. Appliances and meters.
3. Research.
4. Ownership and integration.

1. COAL SUPPLIES

Leaving aside the war period, the position with regard to coal supplies to gas undertakings has not been satisfactory in recent years. The introduction of the Coal Selling Schemes in 1935 did not make for freedom of choice of coal for carbonization. Special consideration has to be given to the selection of coals for carbonization in continuous vertical retorts. As more widely varying coals can be carbonized in horizontal and intermittent retorts, the position in these systems is not so acute. The moisture and ash content of coal must be reduced to the absolute minimum for efficient and economic carbonization.

In an undertaking carbonizing 100,000 tons of coal per annum, each additional 1% of ash involves the payment of approximately £2,000 for the transport and supply of 1,000 tons of inert material. There is a further cost of approximately £250 in the subsequent removal of the ashes to the tip. Also there is the extra cost of plant operation plus the additional wear and tear of plant. Similarly with excessive water content more fuel is required for carbonization, and also more for the working up of residuals.

No single standard method for the evaluation of coal has been evolved, as it is realized that the method used is dependent on the industrial purpose for which coal is required. Proximate analysis, while of considerable value in so far as the weight of true coal substance available can be determined, gives only limited information concerning its gas-making value. Valuable information is obtainable by the carbonization of small test samples, but the most satisfactory method lies in one or two day carbonization tests of five to ten tons of coal in retorts forming part of the working benches coupled to separate ancillary plant. Gas-making values, volumetric and thermal, at the required calorific value, working of coal and steaming behaviour, and the quality and size of the coke produced, can be determined under conditions of operation exactly similar to those actually prevailing in the working retort benches. This information, with a knowledge of the ash and water content, enables a price value to be put on a coal relative to that of a known standard.

With regard to the price of coal under the Coal Selling Schemes, it was found in practice that the procedure by means of a Committee of Investigation was very tedious, and that the consumer had little or no redress.

Carbonizing plants have been designed to give a certain thermal output, based on the use of specified coals. During the war period compulsory changes of coal have occurred, generally to an inferior type, resulting in reduced plant output with a corresponding increase in cost of carbonization. In the wartime period the substitution of unusual coals for gas-making coals has generally been accompanied by an increase in price, thus aggravating an already depreciating position. Has all the gas coal mined been absorbed by gas undertakings? If not the Industry is entitled to know what have been considered as being higher priorities.

With the Ministry of Fuel and Power now controlling the coal, gas, electricity and oil industries, it can reasonably be expected that the Ministry will ensure that—

i. Gas undertakings have freedom of choice in the coals which they purchase for carbonization.

ii. The selected coals shall be purchased on the basis of moisture and ash contents with a rise and fall clause for any qualities supplied, either better or inferior to what is regarded as the basic moisture and ash contents.

iii. There shall be a revision of the method of price fixation.

2. APPLIANCES AND METERS

A. Appliances

The position immediately pre-war was that there was a multiplicity of models of gas appliances supplied by about twenty manufacturers of repute, and the tendency was for undertakings to carry stocks of a larger number of different models than was really necessary, but this was done in order to have the various manufacturers' products available should they be called for by the customer. The number of models

* A Paper to the Manchester District Association of Gas Engineers, Oct. 27.

stocked resulted in a large number of spare parts being carried in stock with all the attendant disadvantages.

In the general recommendations of Part I of the Report of the Committee of Enquiry on Standardization of Appliances, appointed by The Institution of Gas Engineers, the Committee recommend that there should be a policy of rationalization of all new designs of new domestic gas cookers, but leave it to each manufacturer to bring about some degree of standardization on his own range of cookers, limiting his range of models to four. Generally the overall sizes of different makers will be similar, and cooker parts will be interchangeable in a maker's range, but not with those of another maker, except in minor parts such as grill tins, meat tins, grill frets, &c. The writer is entirely in sympathy with the recommendation that all gas undertakings should agree not to ask manufacturers to make minor alterations, and all manufacturers should agree not to make any such modifications to the standard series of cookers to suit individual buyers. This is a reform which is long overdue, and should be extended to all appliances, meters, mains, services and fittings. The various recommendations are welcomed, but it is difficult to see how they will, of themselves, effect substantial reductions in prices of gas cookers.

There is no desire to have "cheap" appliances, but it must be remembered that many pre-war electric cookers were competitive in price, despite the larger market which the gas cooker enjoyed. What will be the features of the post-war gas cooker? So far, the only indication given has been a description in the technical press of the new "Cannon" cooker, embodying many attractive features and utilizing neat-gas burners for the hotplate. The pre-war gas cooker had many advantages over the electric cooker, two of the chief being:

1. Speed of operation.
2. Visual adjustability.

Neither of these advantages can we afford to sacrifice by one second or degree in the post-war appliance. The open hotplate, using the much maligned bunsen burner, had this advantage over the electric closed hot plate—that it would boil water in any type of vessel whatever its condition with the same overall satisfactory result. Generally the consumer is not interested in small increases in thermal efficiency, but prefers to be allowed to use appliances without requiring to develop a new technique in handling apparatus.

Package Kitchens.

For the post-war period there has been produced and displayed for the electrical industry a "package" kitchen, which is a complete unit comprising oven and hotplate, refrigerator, sink, cupboards, with all the necessary fitments. This unit is designed and built up in one complete ensemble, and can be installed in existing kitchens to provide a completely modern kitchen and, at the same time, will be extremely suitable for the post-war houses. It is hoped that the manufacturers of gas appliances have been thinking on similar lines, and that they will be ready to market "package" kitchens embodying gas appliances after the war without undue delay.

Selling Prices of Appliances.

Pre-war the selling prices of appliances on cash, hire purchase and simple hire terms varied considerably throughout the country. It was not uncommon to see the same cooker sold at widely different prices by adjoining undertakings. This was the result of different policies of making a small profit or none at all on the appliance, as against working on the usual margin of profit for such goods. Whatever policy or method is adopted, the revenue has to be obtained either wholly from the appliance or in part from gas and residuals. The plea is here made for uniform selling prices, if not throughout the country, at least in each Region. In the past the large undertakings have been able to secure price concessions from the manufacturers by the purchase of bulk supplies. The Gas Industry claims to be a public service, therefore the public can reasonably expect a degree of uniformity in selling prices. To this end the price of an appliance should be the same to all undertakings, and selling prices, both on cash, hire purchase and simple hire terms, should be the same, at least throughout each Region. Manufacturers would welcome the opportunity to advertise an appliance at one and the same price throughout a Region and, better still, throughout the country. The slogan "*Mr. Therm—Public Servant No. 1*" is hard to beat, but its use must be justified. The undertakings should not be competitive with each other in the purchase of appliances, and it should be remembered that manufacturers do not give concessions in one area without recovery elsewhere.

B. Meters

High Capacity Meters.

Although there have been improvements in gas meters in recent years, the meter position is not satisfactory. We have the high capacity meter, but this meter did not involve any radical change in design or material used. The size of case is smaller than that of the standard type meter of similar capacity, and the gas-ways, valve openings and connexions are enlarged to pass a greater volume of gas per hour, this being achieved by a speeding up of the mechanism.

Consider the costs of two high capacity meters of different capacities:

Type of meter.	Capacity. Cu.ft. per hour.	Bore of conns. In.	Height over bosses. In.	Overall width. In.	Depth back to front. In.	Height from floor to centre of flange. In.	List price. £ s. d.
Ordinary tin case H.C.	4,500	5	53	48½	32	39	131 10 0
Ditto	6,000	6	55½	48½	32	41¾	185 0 0

The height of the larger meter is 2½ in. more, it is 3 in. more in overall width, and the height is increased by 2¾ in. For this small increase in size of case, and an increase in capacity of 1,500 cu.ft. per hour, the extra charge is £53 10s., this representing an increase of approximately 40%; and one may ask why. It appears that the Meter Section of the Society of British Gas Industries base prices on capacity rather than on size of case, and the latter is the truer criterion.

Experience to date of the high capacity meter appears to indicate that maintenance costs will be higher and a shorter life can be expected, compared with the older types of meter.

Prepayment Mechanisms.

In the first place, an optional mechanism was designed so that the mechanism could be changed by the gas undertaking to take one of two different coins. Later there was a demand for an optional mechanism, by which the consumer could use two different coins at will. In each case the optional mechanism was designed and patented by a firm of meter manufacturers, and immediately all the other manufacturers set out to design similar optional mechanisms which would perform the same function, but which would not infringe the original patent.

When one considers that there are at least 31 gas meter firms in this country, it is obvious that a tremendous amount of money must have been expended in the design and development of these optional mechanisms without infringement of other patents. Despite this expenditure, the optional type of meter was sold at the same price as the single coin prepayment meter, and this obviously was not a commercial proposition. Either the optional mechanism justified a higher price, or the price of the single coin meter should have been reduced. What use is made by the consumer of the optional mechanism? There is no apparent reason why one mechanism could not have been designed, developed and accepted by all manufacturers. The optional mechanism, together with the multiplicity of sizes and types of meter which were being supplied immediately pre-war, must have involved the Industry in enormous unnecessary expense. It is pleasing to note that the Meters Committee of The Institution of Gas Engineers has recently recommended that the domestic requirements could be met by the manufacture of three sizes of meters—*viz.*, 100, 200, and 400 cu.ft. per hour—and the recommendations have been accepted by the Gas Installations Committee convened by the Institution. These recommendations are long overdue, and it is imperative that the Gas Industry and the makers should carry out these recommendations, and that the manufacture of the "lights" and "standard" types of meters should cease forthwith. It is essential that undertakings agree not to require manufacturers to make minor alterations, and makers should agree not to make such modifications to the standard design of meter to suit individual buyers.

Manufacturing Costs.

There are about 11 million gas consumers in the country, and if the average life of the meter is taken at twenty years, then 550,000 new meters will be required each year. Supposing this output is divided among the 31 firms, then the average output per firm per week will only be 300 meters. Are the manufacturing plant, machine tools, &c., operated at full capacity when the meter industry is working under normal conditions? It is important that this should be so, to reduce manufacturing costs to the minimum. It is suggested that soldering should be reduced to the absolute minimum, and this might be done by the choice of other suitable materials for the manufacture of meters, and by changes in design. The bulk of the work on gas meters could then be done by semi-skilled labour.

With the above suggestions made effective, undertakings would be able to purchase meters at a reasonable price and obtain value for money. The high cost of purchase, installation, maintenance and use of consumers' measuring apparatus is not always sufficiently appreciated. The following costs are taken from the *Gas World* Analyses of Accounts:

Municipalities, 1938–39:

Meters	(59 undertakings)	0.32d. per therm sold.
Collection	(58 „)	0.26d. „ „

Companies, 1939:

Meters	(35 undertakings)	0.48d. „ „
Collection	(38 „)	0.26d. „ „

These are average costs, and in the case of small consumers the cost of meters and collection can easily amount to 2d. per therm sold. These costs need to be substantially reduced; as a contrast the prospect of a saving of 0.1d. per therm on the gas manufacturing side would bring forth the most strenuous efforts of all concerned.

Meter Research.

Research is necessary in connexion with gas meters, and the following should be undertaken at the earliest possible moment:

i. The use of materials for meters which will reduce to a minimum the use of solder.

ii. Investigation into the most suitable materials for valves and seatings with a view to the elimination of any possibility of sticking, of meters tending to register slow, to obviate the necessity of the use of any lubricant, and to ensure that the meter will be noiseless in operation.

iii. To produce a satisfactory direct reading index.

iv. The production of a meter of the highest capacity in the smallest size case having, at the same time, a reasonably long life with low maintenance cost.

This research should be carried out on co-operative lines by the manufacturers and the Gas Industry, and the results obtained from it should be utilized by all makers and undertakings. There will always be the responsibility of the undertakings to manufacture gas of satisfactory quality and having a negligible gum content.

In the past a significant feature of the Meter Section of the Society of British Gas Industries has been the wonderful co-operation shown in the fixing of minimum prices at which meters may be sold, but more co-operation is required in other directions.

3. RESEARCH

The vital importance of research cannot be over-stressed, and in the Gas Industry the following points stand out:

i. The trifling amount of money allocated for research.

ii. Results have been achieved which are of obvious benefit to the Industry, but there have been no means of ensuring that all undertakings will put the findings into practice.

iii. Until recently there has been lack of co-ordination of the various bodies carrying out research in the Industry. It is hoped that this has been remedied by the formation of the Gas Research Board.

In considering the Gas Research Board, it is noted that members of Council retire on rota every three years, and the retiring members are deemed to be eligible for reappointment. Would it not have been better for retiring members to have at least a break of service of one year before re-election? This procedure has been in operation in The Institution of Gas Engineers for some time, and it is difficult to understand why the Gas Research Board did not follow this precedent. The re-election of retiring members without any break may prevent the entry of new blood to the Council, and this paves the way to stagnation. The same criticism applies to all the national bodies of the Gas Industry with the exception of the Institution. It is agreed that there should be some continuity in the Chairmanship, though not indefinite.

The fundamental research now taking place is vital for the ultimate development of the Industry, but there are many present-day problems affecting utilization and manufacture which require investigation.

Complete Gasification.

The low-pressure system of complete gasification involves the production of blue water gas and its catalysis. This process has been known for a long time and Jobling mentions it in his book on *Catalysis*, published by J. & A. Churchill, London, 1916, on page 71, which reads: "An interesting case is that of the monoxide and dioxide of carbon. From the former, formaldehyde, and then the commercially important methyl alcohol might be expected, whereas in both cases only methane is produced. Nevertheless, this reaction has been utilized to great advantage in a process which aims at increasing the calorific value of water gas by eliminating the carbon monoxide constituent by passage over reduced nickel at 350°–400°C. In this way the residual coke of gas-works may be utilized for the manufacture of lighting gas."

By means of this catalytic process, high calorific value (500 B.Th.U. per cu.ft.) water gas can be made without the use of gas oil.

Research is now proceeding on the commercial application of this process, and it is amazing that this research was not carried out years ago, especially during the many and long periods when coke was a drug on the market.

Retort House Ventilation and Dust Removal.

While undoubtedly accentuated by blackout conditions, retort house ventilation and dust removal is an old and difficult problem and one to which more attention will have to be paid, particularly if difficulty with labour is to be avoided.

Purification.

No purification process simpler and cheaper in operation and control than the present-day oxide purification process is known. Much work has been done on liquid purification, due in part to the desire to obviate oxide changing which, although intermittent, is an arduous and unpleasant operation. In addition, the necessity for the supply of organic sulphur-free gas has resulted in the development of the catalytic process producing further small amounts of H_2S, which necessitates capital expenditure on additional purifiers.

Investigation into the economies of liquid purification and into the methods to prevent oxide hardening in boxes, thus shortening the time and arduous nature of emptying, the possibility of introducing organic sulphur-free gas from the catalytic plant back to the existing purifiers, thus obviating extra dry purification plant, are matters of considerable and immediate interest. A survey of existing methods would be well worth while.

Coke.

While correct grading and attention to ash and moisture contents are vital factors in the provision of a suitable coke for domestic use in open fires, official investigation into the production of activated coke, readily combustible in the normal household grate, would make for a more rapid attainment of a large domestic coke market, and for smoke abatement, than many years of hard work in selling special grates. It will be agreed that to reduce the production of breeze may be an easier problem than its post-war disposal, consequently investigation into this matter should not be forgotten, although new outlets for breeze should still be developed.

Street Lighting.

Co-operative research with the lamp manufacturers is required in the production of new design low-pressure street lighting units on modern lines and with pleasing appearance. These units must be efficient and have reasonably low maintenance costs, and it should be possible for the Industry and the manufacturers to agree standard designs, so as to reduce the number of spare parts carried in stock and obviate the use of a series of weird trade names for lanterns.

Meters.

Reference has already been made elsewhere in this Paper to meter research.

4. OWNERSHIP AND INTEGRATION

The Author read a Paper at a Joint Gas Conference at the British Industries Fair in February, 1939, and the following statement was made concerning the coal, gas and electricity industries: "Any mutual scheme for the sane distribution of the various loads between these three industries in the best interests of the nation does not appear to be within the realm of possibility and sounds more like Utopia. There remains then the continuance of the present unsatisfactory state of affairs, or the setting up of a National Fuel Board to control the coal, gas and electricity industries, and I think the latter is likely to come about much sooner than many like to think possible."

What has happened since 1939? In 1942 the Ministry of Fuel and Power was formed, having control of coal, gas, electricity, and oil interests throughout the country, and since then the Minister has appointed a National Fuel Advisory Council to advise him on the utilization of the various fuels available in this country.

In October, 1943, the Gas Industry submitted to the Minister, at his request, a report on the Post-War Planning of the Industry. Put briefly this Report virtually stated:

i. The Gas Industry has done a good job of work in the past, and is still doing a good job of work.

ii. The Industry knows that certain improvements are necessary, but leave the Industry alone and it will put its house in order.

The Report dismisses nationalization as being unnecessary, and says little about the public ownership system. It provides for piecemeal integration, which will not suffice, and does not exercise compulsion, which is essential. It is not enough to carry out integration in densely populated areas, leaving rural areas to go all-electric. The Gas Industry could and should supply the heat requirements of the rural areas, but this can only be done by an all-embracing scheme of integration. If left to electricity, it will involve a greater consumption of raw coal than if done by gas and coke. Even now a few small gas undertakings are fading out, leaving the field completely open to electricity, and other small ones are being kept going only with the assistance of neighbouring undertakings. The big majority of undertakings are very efficient and have stood up to wartime conditions remarkably well, but the strength of any chain is its weakest link.

While the above-mentioned Report was in draft, the Author sent to the technical Press ["GAS JOURNAL," Sept. 29, 1943] details of a proposed scheme of public ownership for the Gas Industry, and suggested that, as there was such great diversity of opinion on the question of ownership, the Industry should request the Minister of Fuel and Power to arrange for the appointment of a small independent Committee to make a thorough investigation of the Gas Industry in all its aspects, and to make recommendations with the object of ensuring the best service to the community, together with the rational use of coal, this Committee to be given the necessary powers to call for such evidence as it may require from within and without the Industry. Would it not have been better for the Industry to have made this suggestion, rather than wait for the Minister to take the initiative?

In considering the question of ownership, the Industry may be divided into the following classes:

A. Company undertakings.

B. Holding company undertakings.

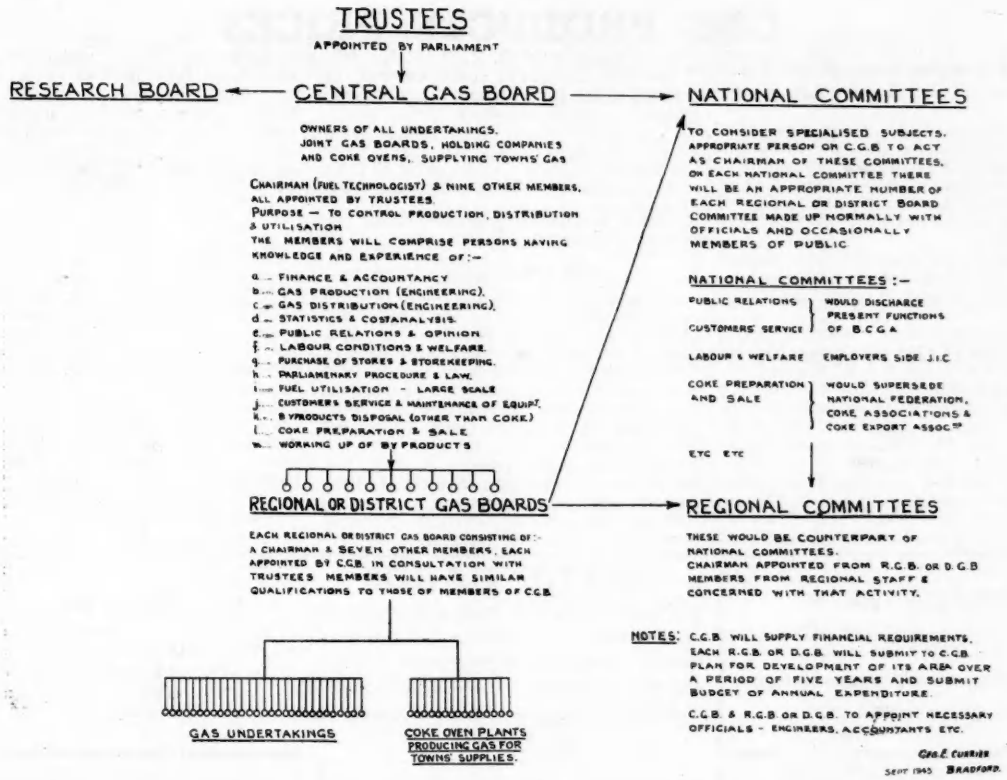
C. Municipal undertakings.

The problem is to bring these three classes of ownership under one control.

Municipalities are opposed to the absorption of their undertakings by companies and *vice versa*. That absorptions and amalgamations are vital to the future success of the Industry cannot be denied. How then are these to be achieved? I will try to give you the answer.

Firstly there has been much loose talk and confused thinking with regard to nationalization and public ownership. The type of public ownership referred to is similar to that of the London Passenger Transport Board. With nationalization, all undertakings are owned by the State, whereas with public ownership the undertakings pass to a Central Gas Board composed of experts in all the Industry's activities. Further, with nationalization all staff and employees become civil servants, whereas with public ownership their status remains unaltered.

The scheme proposed by the Author a year ago, and shown diagrammatically on the appended chart, provided for the setting up of Trustees by Parliament, with powers to appoint a Central Gas Board


TRUSTEES
APPOINTED BY PARLIAMENT
RESEARCH BOARD
CENTRAL GAS BOARD
NATIONAL COMMITTEES
OWNERS OF ALL UNDERTAKINGS. JOINT GAS BOARDS, HOLDING COMPANIES AND COKE OVENS, SUPPLYING TOWNS' GAS
CHAIRMAN (FUEL TECHNOLOGIST) & NINE OTHER MEMBERS, ALL APPOINTED BY TRUSTEES.
PURPOSE — TO CONTROL PRODUCTION, DISTRIBUTION & UTILISATION
THE MEMBERS WILL COMPRISE PERSONS HAVING KNOWLEDGE AND EXPERIENCE OF:—
a — FINANCE & ACCOUNTANCY
b — GAS PRODUCTION (ENGINEERING).
c — GAS DISTRIBUTION (ENGINEERING).
d — STATISTICS & COSTANALYSIS.
e — PUBLIC RELATIONS & OPINION.
f — LABOUR CONDITIONS & WELFARE.
g — PURCHASE OF STORES & STOREKEEPING.
h — PARLIAMENTARY PROCEDURE & LAW.
i — FUEL UTILISATION - LARGE SCALE
j — CUSTOMERS SERVICE & MAINTENANCE OF EQUIPT.
k — BYPRODUCTS DISPOSAL (OTHER THAN COKE)
l — COKE PREPARATION & SALE
m — WORKING UP OF BY PRODUCTS
TO CONSIDER SPECIALISED SUBJECTS. APPROPRIATE PERSON ON C.G.B. TO ACT AS CHAIRMAN OF THESE COMMITTEES. ON EACH NATIONAL COMMITTEE THERE WILL BE AN APPROPRIATE NUMBER OF EACH REGIONAL OR DISTRICT BOARD COMMITTEE MADE UP NORMALLY WITH OFFICIALS AND OCCASIONALLY MEMBERS OF PUBLIC
NATIONAL COMMITTEES :—
PUBLIC RELATIONS
CUSTOMERS' SERVICE
WOULD DISCHARGE PRESENT FUNCTIONS OF B.C.G.A
LABOUR & WELFARE
EMPLOYERS SIDE J.I.C.
COKE PREPARATION AND SALE
WOULD SUPERSEDE NATIONAL FEDERATION, COKE ASSOCIATIONS & COKE EXPORT ASSOC.N
ETC ETC
REGIONAL OR DISTRICT GAS BOARDS
REGIONAL COMMITTEES
EACH REGIONAL OR DISTRICT GAS BOARD CONSISTING OF:- A CHAIRMAN & SEVEN OTHER MEMBERS, EACH APPOINTED BY C.G.B. IN CONSULTATION WITH TRUSTEES MEMBERS WILL HAVE SIMILAR QUALIFICATIONS TO THOSE OF MEMBERS OF C.G.B.
THESE WOULD BE COUNTERPART OF NATIONAL COMMITTEES. CHAIRMAN APPOINTED FROM R.G.B. OR D.G.B MEMBERS FROM REGIONAL STAFF & CONCERNED WITH THAT ACTIVITY.
NOTES: C.G.B. WILL SUPPLY FINANCIAL REQUIREMENTS. EACH R.G.B. OR D.G.B. WILL SUBMIT TO C.G.B. PLAN FOR DEVELOPMENT OF ITS AREA OVER A PERIOD OF FIVE YEARS AND SUBMIT BUDGET OF ANNUAL EXPENDITURE.
C.G.B. & R.G.B OR D.G.B. TO APPOINT NECESSARY OFFICIALS - ENGINEERS, ACCOUNTANTS ETC.
GAS UNDERTAKINGS
COKE OVEN PLANTS PRODUCING GAS FOR TOWNS' SUPPLIES.
GEO. E. CURRIER
SEPT 1945 BRADFORD.

composed of experts in gas production, distribution and utilization, fuel technology, by-products, finance, law, publicity, &c. This Central Gas Board to be given statutory powers to acquire the whole of the undertakings in Great Britain, and to control all production, distribution, and utilization of gas. The Central Board would control the policy of the Industry in all its aspects, and there would be Regional Gas Boards composed of experts in a similar way to the Central Board. The Regional Boards would carry out the policy of the Central Board, but there would be flexibility to meet the varying local conditions in each Region.

The whole of the manufacturing plant in each Region would be co-ordinated so as to be operated as efficiently and economically as possible for the Region as a whole. The Regional Board would decide the stations to be retained for manufacturing purposes and those which were to be closed down, and the date of such closing down, and would also design the grid for the Region. There would be considerable reductions in the amount of stand-by plant, machinery and equipment necessary for the production and distribution of gas, with resultant economies. Also there would be an inevitable rise in status of those engaged in the Industry. By this means a scheme of integration embracing all undertakings could be completed in five to eight years.

All costing and statistics would be standardized, and to retain incentive and competitive spirit among individual undertakings statistics of each would be kept separately and circulated to all the other undertakings. The whole of the resources of all the undertakings in each district would be pooled, including finances, labour (technical, skilled and unskilled), and all materials. Although labour and materials would remain to some extent dispersed, as now, they would become mobile and transferable as required, and much overlapping would be eliminated, with resultant economies. Central purchasing would be carried out by each Regional Board. There would be co-ordinated sales policies, both in regard to appliances and tariffs, and although it may not be possible to have uniform gas prices throughout each district, the design and basis of the tariff could be the same for all undertakings. Each undertaking as it now exists would still be able to maintain its local contacts through its own personnel.

The acquisition of all undertakings by the Central Gas Board would, in the case of companies, involve a transfer of scrip, and in the case of local authorities would be by means of a Government loan, which would be repaid by the Central Board. The basis of valuation in the case of local authorities would have to be agreed, and while this may present some difficulty, the problem cannot be regarded as being insuperable.

For the scheme to be fully effective it will be necessary to bring those coke oven plants into it which produce gas for towns' supplies.

It will be observed that the set-up as shown on the chart will provide for the disbandment of the whole of the national associations, with the possible exceptions of The Institution of Gas Enginers, the Gas Research Board, and the Federation of Gas Employers. The work of the other national bodies would be carried out by national committees comprising the experts from the Regional Boards dealing with each phase of the Industry, and including the corresponding experts from the Central Board.

With such a scheme of public ownership in operation, the Industry's problems and difficulties would become more easy of solution. Take the two or three problems discussed earlier in this Paper. First, the coal problem. It would be much easier for a Regional Board to negotiate the purchase of all the coal requirements of the Region, and arrange for the most suitable coals to be supplied to various types of carbonizing plant, and to deal with any complaints regarding price or quality. Similarly with regard to appliances and meters. The Central and Regional Boards could deal more effectively with manufacturers than the national bodies as at present constituted, or with individual undertakings, on questions of design, construction and prices of meters and appliances. Coming to research, this would be given considerably more financial backing than has been the case in the past, and the Research Board would come under the control of the Central Gas Board. The policy of the Research Board would be directed by the Central Board, and it is essential that the findings of the former, when deemed advisable by the latter, be effectively carried out by gas undertakings. There would be much closer working between the Gas Industry through the Central and the Regional Boards, and the manufacturers of gas plant, machinery and appliances through the manufacturers' association—*viz.*, the Society of British Gas Industries.

Looking back some sixteen or seventeen years, it will be remembered that the proposals for the Electricity Grid were not then enthusiastically received by the electricity supply undertakings. To-day it is generally recognized that the Electricity Grid is the finest achievement of the electriciy industry up to the present time. The industry would be in an even stronger position if the powers of the Central Electricity Board were extended to embrace distribution and utilization in addition to production. It is understood that the Board has already planned all the plant replacements and extensions at every generating station in the country for four or five years ahead. The larger gas undertakings have programmed for some time ahead, but generally as separate undertakings and without co-ordination, which may result in unnecessary stand-by plant, &c.

The processing of coal by carbonization provides the most economic and efficient use of raw coal, and the Gas Industry has the strongest possible claim to provide the heat requirements of the community. In order to attain this service to the public with the maximum efficiency and economy the bringing of all undertakings into a scheme of public ownership is essential.

I hope the Members have found this Paper to be sufficiently provocative to promote a stimulating discussion.

GAS PRODUCTS PRICES

The London Market Oct. 30.

The prices of Coal Tar Products are unchanged.

A Government Order came into effect on March 1 controlling the price of Benzole and Coal Spirit and replacing the Control of Coal Tar Naphtha and Xylole Order, 1943.

The Order is known as the Control of Benzole and Coal Spirit Order, 1944 (S.R. & O. 1944, No. 172).*

By this Order the price of Motor Benzole is fixed at 2s. per gallon. The Order also lays down the method of evaluating Crude Benzole.

The Order also calls for periodical returns to the Ministry of Fuel and Power from all producers of Crude and Refined Benzole.

In connexion with the Coal Tar products market, the Government Order designated the Contol of Toluene (No. 4) Order, 1944 (S. R. & O. 1944, No. 170), contains an amendment of the Control of Toluene (No. 3) Order, 1943.

Attention is called to a new Government Order, which amends the price of Toluene as from Sept. 1, 1944. The Order is entitled, The Control of Benzole and Coal Spirit (No. 2) Order, 1944 (S. R. & O., No. 988).

The only change in connexion with the prices of Coal Tar Products refers to Naphthalene. A new Government Order, entitled the Coal Tar Products Prices (No. 2) Order, 1944 (S. R. & O. 1944, No. 1051), allows increases in the maximum prices for all forms of Naphthalene. The new Order came into force on Sept. 22, 1944.

* Slightly amended by Control of Benzole and Coal Spirit (No. 2) Order, 1944, which amendments came into force on Oct. 1.

The Provinces Oct. 30.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 90's, 2s. to 2s. 2½d., pure, 2s. 9d. (now controlled by S. R. & O. 1944, No. 988, operative from Sept. 1, 1944. Benzole and Coal Spirit, also Coal Tar Naphtha and Xylole, are now controlled by the Control of Benzole and Coal Spirit Order, 1944, dated Feb. 18, 1944, S. R. & O. 1944, No. 172, operative from March 1, and S. R. & O. 1944, No. 988, part 1, operative from Oct. 1, 1944. Carbolic acid, 60's, anthracene, creosote oil (hydrogenation), coal tar oils (timber preservation, &c.), and strained anthracene oil controlled by the Coal Tar Products Prices Order, 1943, dated Oct. 20, 1943 (S. R. & O. 1943, No. 1528), operative from Nov. 15, 1943. Naphthalene now controlled under S. R. & O. 1944, No. 1051, operative from Sept. 22, 1944.

* In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Scotland Oct. 28.

Home trade continues active, but export business is difficult to arrange. Refined tar*: Yield to distillers is 4½d. per gallon *ex* Works, naked. Creosote oil: Timber preserving quality,* 5½d. to 6½d.; hydrogenation oil,* 5½d.; low gravity or virgin oil,† 7½d. to 7½d.; benzole absorbing oil,* 6½d. to 8d. per gallon. Refined cresylic acid* is 3s. 6d. to 4s. 6d. per gallon *ex* Works, naked, according to quality. Crude naphtha†: 6½d. to 7d. per gallon. Solvent naphtha*: Basic prices delivered in bulk, 90/160 grade, 2s. 8d., and 90/190 Heavy naphtha, Unrectified, 1s. 10½d.; Rectified, 2s. 2d. per gallon. Pyridine†: 90/160 grade, 13s., and 90/140 grade, 15s. per gallon.

* Price controlled. † Uncontrolled.

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GAS STOCKS AND SHARES

There was a cheerful sentiment at the opening last week, and for the first three days the volume of business was heavier than the week before. British Funds continued firm, and selective support was again forthcoming for industrial shares. Brazilian bonds and French stocks were strong features.

A steady volume of business was recorded among gas stocks and shares and, as will be seen below, the market generally maintained a firm tone with a rising tendency. This has also been the position throughout the whole of the past month, for a comparison of the prices in the current lists with those ruling at the end of September shows that with very few exceptions all movements have been in an upward direction although there were no special features.

The following quotations were changed during the week:

PROVINCIAL EXCHANGES

Bristol 2nd 4 p.c. Deb.	101½—103½	+⅜
Newcastle Units	25/3—25/9	+-/1½d.
Sheffield Cons.	147—149	+1

OFFICIAL LIST.

Barnet Ord.	156—161	+1
Bombay	35/6—38/6	+1/–
Gas Light 3½ p.c. max.	80—83	+½
Ditto 4 p.c. Pref.	100—102	+1
Imperial Continental Ord.	113—116	+1
South Metropolitan 6 p.c. Pref. ...	124—129	+2
Tottenham Ord.	115—120	+1
Wandsworth Cons.	116—121	+1

SUPPLEMENTARY LIST

Brighton 5 p.c. Deb.	118—123	+1
Cheltenham Ord.	99—104	+1

Quotations on the London and Provincial Stock Exchanges

OFFICIAL LIST

Issue. £	When ex-Dividend.	Dividends Interest. Amnt. or Rate% Prev. Hf. Yr. Actual.	Last Hf. Yr. Actual.	NAME.	Quotations Oct. 26
1,767,439	Sept. 11	20/–	20/–	Alliance & Dublin Ord. ...	112—122
374,000	June 26	2	2	Do. 4 p.c. Deb.	97—102
891,664	Oct. 23	6d.	6d.	Asscd. Gas & Water U'd'ts Ord.	22/6—23/6
388,938	"	7½d.	7½d.	Do. Deferred	23/—24/–
500,000	Sept. 4	2½	2½	Do. 4½ p.c. Red. Cum. Pref.	20/3—21/3
535,545	"	2	2	Do. 4 p.c. Red. Cum Pref.	20/—21/–
341,966	"	2	2	Do. 4 p.c. Irred. Cum. Pref.	17/9—18/9
561,370	Aug. 14	70/–	70/–	Barnet Ord. 7 p.c.	156—161
300,000	Oct. 9	10½d.	8½d.	Bombay, Ltd.	35/6—38/6
690,407	Aug. 21	70/–	70/–	Bournemouth 7 p.c. max. ...	155—160
362,025	June 12	2	2	Do. 4 p.c. Deb. ...	100—105
659,955	Sept. 11	45/–	25/–	Brighton, &c., 5 p.c. Con. ...	98—103
855,000	Sept. 25	60/–	60/–	Brit. Gas Light Ord.	123—128
545,000	June 26	2½	2½	Do. 5½ p.c. 'B' Cum. Pref.	109—114
120,000	" 12	2	2	Do. 4 p.c. Red. Deb.	94—99
10,000	Nov. 6 '33	4/6	4/6	Cape Town, Ltd., 4½ p.c. Cu. Pf.	5—6
626,860	July 17	50/–	70/–	Cardiff Con. Ord	120—125
24,500	May 30	8½d.	8½d.	Colombo 7 p.c. Pref	21/6—23/6
764,169	Sept. 25	4.78d.	4.78d.	Colonial Gas Assn. Ltd. Ord. ..	14/6—17/6
400,000	"	7.649d.	7.649d.	Do 8 p.c. Pref. ...	15/—20/–
1,748,090	July 22 '40	30/–	30/–	Commercial Ord.	72—77
620,000	June 15	1½	1½	Do. 3 p.c. Deb.	71—76
286,344	Aug. 21	2½	2½	Do. 5 p.c. Deb.	110—115
807,560	"	60/–	60/–	Croydon sliding scale	122—127
644,590	"	50/–	50/–	Do. max. div.	105—108
620,385	June 26	2½	2½	Do. 5 p.c. Perp. Deb. ...	120—125
179,500	Aug. 28	50/–	50/–	East Surrey 'B,' 5 p.c.	102—107
176,461	June 26	2½	2½	Do. 5 p.c. Deb. (Irred.)...	120—125
239,135	Aug. 21	6d.	6d.	Gas Consolidation Ord. 'A' ...	20/—22/–
250,000	"	4½	4½	Do. Ord. 'B' ...	19/—21/–
250,000	May 8	2	2	Do. 4 p.c. Red. Cum. Pref.	18/—20/–
19,107,811	July 31	6d.	6d.	Gas Light & Coke Ord. ...	22/9—23/9a
2,600,000	"	35/–	35/–	Do. 3½ p.c. max.	80—83
4,477,106	"	2	2	Do. 4 p.c. Con. Pref. ...	100—102
2,993,000	July 10	1¾	1¾	Do. 3½ p.c. Red. Pref. ...	99—101
8,602,497	May 30	1½	1½	Do. 3 p.c. Con. Deb. ...	86—88
3,642,770	"	2½	2½	Do. 5 p.c. Red. Deb. ...	108—110
3,500,000	"	2½	2½	Do. 4½ p.c. Red. Deb. ...	108—110
700,000	Sept. 11	1⅞	1⅞	Do. 3½ Red. Deb. ...	97—100
5,600,000	May 13 '40	80/–	80/–	Imperial Continental Cap. ...	113—116
43,820	July 31	1½	1½	Do. 3½ p.c. Red. Deb. ...	97—100
2,167,410	Aug. 21	50/–	50/–	Liverpool Ord.	115—118
231,978	"	50/–	50/–	M.S. Utility 'C' Cons.	103—108
918,657	"	2	2	4 p.c. Cons. Pref.	98—103
675,000	May 1	‡40/–	‡40/–	Montevideo, Ltd.	85—90
300,000	April 24	70/–	80/0	Oriental, Ltd.	140—145
368,537	June 12	40/–	57/6	Plymouth & Stonehouse 5 p.c.	110—115
621,667	Aug. 14	72/6	72/6	Portsmouth & Gosport Cons.	127—132
2,381,363	May 15	†9½d.	†9½d.	Primitiva Holdings, Ltd. Ord.	11/6—13/6
233,900	June 12	3	3	Do. 6½ p.c. Red. Cum. Pref.	97—102
648,999	Sept. 11	6⅜	6⅜	Severn Val. Gas Cor. Ld. Ord.	22/6—23/6
597,972	" 4	2½	2½	Do. 4½ p.c. Cum. Pref. ...	20/6—21/6
2,528,714	Aug. 21	6d.	3½d.	South East'n Gas Cn. Ld. Ord.	21/—22/–
1,000,000	"	2½	2½	Do. 4½ p.c. Red. Cum. Pref.	21/—22/–
1,068,869	"	2	2	Do 4 p.c. Irred. Cum. Pref.	20/—21/–
6,709,895	Feb. 14	†20/–	†60/–	South Met. Ord.	94½—97½
1,135,812	Aug. 21	3	3	Do. 6 p.c. Irred. Pref.	124—129
850,000	"	2	2	Do. 4 p.c. Irred. Pref.	95—100
1,895,445	June 26	1½	1½	Do. 3 p.c. Perp. Deb.	84—88
1,000,000	July 17	2½	2½	Do. 5 p.c. Red. Deb.	102—107
1,543,795	July 31	60/–	50/–	South Suburban Ord. 5 p.c	112—117
512,825	"	2½	2½	Do. 5 p.c. Perp. Pref.	108—113
500,000	"	2	2	Do. 4 p.c. Perp. Pref.	97—102
250,000	"	1⅞	1⅞	Do. 3½ p.c. Red. Pref.	93—98
888,587	June 12	2½	2½	Do. 5 p.c. Perp. Deb.	121—126
750,541	Aug. 14	60/–	50/–	Southampton Ord.	105—110
350,000	"	2½	2½	Swansea 5½ p.c. Red. Pref.	103—108
1,076,495	" 8	50/–	50/–	Tottenham & District Ord. ...	115—120
338,555	"	2½	2½	Do. 5 p.c. Pref.	107—112
483,380	June 12	2	2	Do. 4 p.c. Perp. Deb. ...	98—103
1,247,505	May 30	4½d.	7½d.	U. Kingdom Gas Cor. Ord. ...	21/—22/–
1,085,952	" 15	5½d.	5½d.	Do. 4½ p.c. 1st Cum. Pref.	21/—23/–
772,709	" 15	4½d.	4½d.	Do. 4 p.c. 1st Red. Cum.Pref.	19/—21/–
745,263	June 19	5½d.	5½d.	Do. 4½ p.c. 2nd Non.Cum. Pf.	17/—19/–
1,200,000	Sept. 18	1⅜	1⅜	Do. 3½ p.c. Red. Deb. ...	97—102
380,608	Aug. 14	66/3	66/3	Uxbridge, &c., 5 p.c. ...	119—124
1,371,138	July 17	50/–	50/–	Wandsworth Consolidated ...	116—121
2,525,768	"	2	2	Do. 4 p.c. Pref.	98½—101½
1,343,964	June 12	2½	2½	Do. 5 p.c. Deb.	123—128
383,745	"	2	2	Do. 4 p.c. Deb.	97—102
558,342	Aug. 8	50/–	50/–	Watford & St. Albans Ord. ...	113—118
300,000	June 5	1½	1½	Do. 3½ p.c. Red. Deb. ...	95—100

SUPPLEMENTARY LIST

Issue. £	When ex-Dividend.	Dividends Interest. Amnt. or Rate% Prev. Hf. Yr. Actual.	Last Hf. Yr. Actual.	NAME.	Quotations Oct. 26
351,685	June 12	2½	2½	Brighton, &c., 5 p.c. Perp. Deb.	118—123
415,250	"	2	2	Bristol Gas Co., 4 p.c. New Deb.	100—103
140,205	July 31	70/–	70/–	Cambridge, &c., 7 p.c. Cons. 'B'	140—145
295,932	Aug. 14	50/–	50/–	Cheltenham, 5 p.c. Cons.Ord....	98—103
42,500	June 12	2	2	Do. 4 p.c. Perp. Deb....	99—104
150,000	Aug 21	2	2	Croydon Gas, 4 p.c. Pref. (Irr.)	95—100
130,000	June 26	2	2	Do. 4 p.c. Deb. ...	97—102
146,700	Aug. 28	2½	2½	East Surrey, 5½ p.c. Pref. 'A' ...	110—115
53,220	"	3	3	Do. 6 p.c. Cum. Pref. ...	120—125
...	Aug. 19 '40	40/–	40/–	Eastbourne, 'B' 3½ p.c.... ...	97—102
117,425	Feb. 5 '40	80/–	80/–	East Wight Cons. 5 p.c. ...	85—90
25,000	June 19	2½	2½	Guildford 4½ p.c. Red. Deb. ...	100—105
156,600	Aug. 14	50/–	50/–	Hampton C't, 5 p.c. Cons. Ord.	100—105
18,000	Dec. 29 '41	3½	3½	Malta & Med'n., 7 p.c. 1st Pref.	40—50
10,845	June 30 '41	37/6	37/6	Do. 7½ p.c. 2nd Pref.	40—50
50,000	Aug 21	52/3	52/3	Mid. South. Util., 'A' Cons. 5 p.c.	105—110
70,380	June 19	2½	2½	Newport (Mon.), 5 p.c. Deb...	115—120
65,000	Aug. 14	2½	2½	North Middlesex, 5 p.c. Pref. ...	107—112
70,000	Sept. 11	2½	2½	Plymouth & Stone., 5 p.c. Deb.	117—122
76,501	June 19	2	2	Reading, 4 p.c. Perp. Deb. ...	97—102
74,777	Oct. 2	2	2	Romford, 4 p.c. Debs. (Reg.) ...	97—102
21,000	June 12	2½	2½	Slough, 5 p.c. Perp. Deb. ...	120—125
211,740	"	2½	2½	Southampton, 5 p.c. Red. Deb.	105—110
363,575	July 3	2½	2½	Tottenham, 5 p.c. Reg. Red. Mt.	97—102
202,019	Aug. 14	75/–	75/–	Tunbridge Wells, 4 p.c. Scale ...	125—130
135,257	June 12	2½	2½	Uxbridge &c., 5 p.c. Perp. Deb.	120—125

PROVINCIAL EXCHANGES

					Quotations Oct. 20
804,948	July 31	2½	2½	Bath Cons.	113—115
122,577	Aug. 8	2½	3½	Blyth 5 p.c Ord.	120—122
1,667,250	July 17	2½	2½	Bristol, 5 p.c. max.	118—120
120,420	June 12	2	2	Do. 1st 4 p.c. Deb.	102—104
415,250	"	2	2	Do. 2nd 4 p.c. Deb.	101½—103½
328,790	"	2½	2½	Do. 5 p.c. Deb.	121—123
157,150	July 31	2½	3½	Chester 5 p.c. Ord.	98—102
92,500	June 12	2	2	Do. 4 p.c. Pref.	80—82
36,430	"	1¾	1¾	Do. 3½ p.c. Deb.	86—90
41,890	"	2	2	Do. 4 p.c. Red. Deb. ...	100—102
542,270	Aug. 8	3	4½	Derby Cons.	127—132
55,000	June 12	2	2	Do. 4 p.c. Deb.	97—102
40,000	Aug. 8	5¼	5¼	Exeter 10 p.c.	185—195
10,000	"	5	5	Great Grimsby 'A' Ord. ...	160—170
6,500	"	5	5	Do. 'B' Ord. ...	160—170
79,000	"	5	5	Do. 'C' Ord. ...	150—160
732,000	Aug 21	2	2	Hartlepool G. & W. Cn. & New	93—95
490,681	June 19	1⅛	1⅛	Liverpool 3½ p.c. Red. Deb. Stk.	95—100
245,500	"	2	2	Do. 4 p.c. Red. Deb. Stk.	101—102
306,083	"	2	2	Do. 4 p.c. Deb.	101—102
680,000	"	2½	2½	Do. 5 p.c. Red. Stk. ...	104—109
20,000	June 19	2½	2½	Long Eaton 5 p.c. Pref.	9—11
80,000	"	2½	2½	Do. 5 p.c. Deb.	108—113
2,430,267	July 31	2½	2½	Newcastle and Gateshead Con.	25/3—25/9a
682,856	"	2	2	Do. 4 p.c. Pref.	100—102
776,706	July 3	1⅛	1⅛	Do. 3½ p.c. Deb.	100—102
250,000	"	1⅛	1⅛	Do. 3½ p.c. Red. Deb. ...	98½—100½
73,186	May 1	2	2	Do. 4 p.c. Red. Deb. ...	102—104
106,280	Aug. 14	5	5	Preston 'A' 10 p.c.	170—175
188,219	"	3½	3½	Do. 'B' 7 p.c.	132—135
1,806,339	Aug. 28	3½	3½	Sheffield Cons.	147—149
95,000	July 3	2	2	Do. 4 p.c. Deb.	98—100
332,351	Aug. 28	3	3	Sunderland 6 p.c. max. ...	110½—112½
192,150	Aug. 14	2½	2½	Weston-super-Mare Cons. ...	110½—112½
64,338	July 3	2	2	Do. 4 p.c. Deb.	99—101
33,340	"	3½	3½	Do. 7½ p.c. Deb.	145—150

a—The quotation is per £1 of Stock. * Ex. div. † For year. ‡ Paid free of income-tax.